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ARMY OPPORTUNITIES.

A little material from Army practice continues to find its way into our clinical reports, and suggests how much remains unreported. Two examples appeared in our columns last week. One was the discussion upon mange and ringworm by the Central Society, a great deal of which was based upon experience in connection with Army horses. The other was Lieut. Stokoe's article upon the treatment of the same diseases, which represented Army experience solely.

Lieut. Stokoe's article describes a treatment which appears to possess two great merits—simplicity and rapidity; and it will be more than interesting to know whether other clinicians confirm the author's claims for it. The Central Society's discussion followed more classic lines, but contained much that will repay perusal. Perhaps the most noteworthy features were the remarks upon prophylaxis, the preference shown for that time-honoured agent, sulphur, and the general recognition of the importance both of thoroughness in detail and of judgment in applying the dressing. The last point, in particular, is one which not every veterinarian, even to-day, has fully realised.

Both notes illustrate how greatly the clinical opportunities of the army veterinary surgeon just now exceed those of the civilian. Equine mange, in many civil practices, is not a very common disease, and equine ringworm is generally regarded as rather rare. But an army veterinary surgeon in war time sees a great deal of both diseases—enough, in fact, to more than equal the life-experience of many civilian practitioners. These are by no means the most important equine war diseases—we all know the part that glanders, contagious pneumonia, influenza, and strangles play in war time. Much the same can be said with regard to many sporadic affections. Laminitis, for instance, is now rarer in civil life than of old; and not a few civil practitioners have little to do with it. But, on a hard campaign, it is still and always will be common. For most branches of equine practice the army is now the best field of observation available, and will continue to be so till the end of the war.

Army experience is bound to have a tremendous effect upon civil practice when the present temporary veterinary officers and Territorials return to it. The effect might be even greater were their experience more freely communicated; but, considering how many hundreds of our members are now with the forces, the amount of such communication is still pitiably small.

DISTEMPER—ETIOLOGY AND VACCINATION.

The following is a summarised abstract of a short report upon the above subject which H. Carré, Chief of the Service of Research upon Infectious Diseases at the Alfort School, presented at the International Veterinary Congress last year.

The author commences by pointing out that the etiology of distemper is still very obscure. Only one point is incontestable, viz., the extremely contagious nature of the affection. This etiological obscurity depends upon many causes, among them being the difficulties of research and the contradictory results that are current, the absence of truly pathognomic symptoms and the resultant impossibility of clinical differentiation of the affections which may attack young dogs, the lack of information regarding the exact parts which pertain, in the symptoms and the lesions, to the virus proper of the disease and to the microbes of secondary infections, the great diversity of accidents which may appear, in very variable order, in the course of the disease, the diverse receptivity of different breeds of dogs, and the multiplicity of microbes encountered in the lesions.

The author notes the fact that Ligniéres, whose conclusions he quotes verbatim, has now admitted that the true specific agent of the disease appears to be the filterable virus demonstrated by Carré in 1905. Ligniéres has thus given up the claim of specificity for the *Pasteurella canis*, though he holds that various microbes, the *Pasteurella canis* among them, are capable, apart from the filterable virus, of producing an affection clinically similar to distemper.

Ligniéres, Carré, and Eugène all agree that the filterable virus is an established fact and beyond all dispute; but it is nevertheless true that precise information is still required concerning the part played by it in the causation of the various lesions observed during the course of distemper.

The author dwells at some length upon the well-known work of Ferry, who, in his judgment, has by no means established the specific nature of his *Bacillus broncho-septicus*. Various reasons, such as the harmlessness of cultures when injected subcutaneously, warrant grave doubt being cast upon this organism as being the cause of a disease which is exceedingly contagious. Carré adds that, in seven young dogs manifestly affected with distemper, he failed to find the *B. broncho-septicus*. At present, he regards this organism as a simple agent of secondary infection, and not at all as the specific germ of distemper.

In criticising the further work of Ferry, Carré points out that that author and Kregenow (a

German worker who agrees with Ferry in discrediting the view that distemper is caused by a filterable virus), express surprise at the diagnostic importance which he seems to attach to the cutaneous pustules. But Carré is not alone in attaching importance to these pustules; all French veterinarians, for a long time past, have relied greatly upon them in diagnosis. The double fact that the German and American workers have failed to demonstrate the filterable virus and have not encountered pustules suggests to Carré doubt as to whether he and they have really been studying the same disease.

Finally, Carré deals briefly with the question of vaccination. He has himself been working for some time upon this subject, but is not yet prepared to publish his results. Meanwhile, he merely intimates that he has obtained results which "deserve to be known."

The report concludes with some strong criticisms of the method of vaccinating with cultures of *B. bronchosepticus*, which does not appear to rest upon a very firm basis, and of the value of which Carré is evidently sceptical.

ABSTRACTS FROM FOREIGN JOURNALS.

Thombosis of the Arteria femoralis in a Horse.

Reichenbach, of Leipzig, has recorded this case. The subject was a chestnut gelding of Belgian breed, about seven years old, and in good condition. The owner's account was that the horse did light work at a walk well, but, when taxed severely, lameness of the right hind limb appeared, and increased so greatly with continued work that further progression became impossible.

On examination, the author found at first that the horse trotted sound. He was kept trotting for further observation; and, after about five minutes movement, a slight lameness of the right hind leg appeared. After another five minutes this had increased so much that the horse could not travel further.

The right hind limb was wholly cold. Pulsation was imperceptible in the lateral metatarsal and digital arteries of this limb; while it was strong in the same arteries of the left hind limb. The author then made a rectal examination, and palpated the vessels of the pelvic region, but could detect nothing abnormal. After the horse had rested for a quarter of an hour, he was able to work without difficulty.

The author diagnosed thrombosis of the femoral artery. Treatment with fibrolysin was decided upon, though it was regarded as no more than experimental. On another day, therefore, the author injected 10 c.c. of fibrolysin intravenously. At the same time he advised that the horse should be harnessed again after two days, and that his work should be gradually increased.

Eight days after the injection, the owner reported that, even after continuous hard work, the horse only went quite slightly lame.

The author now injected another 10 c.c. of fibrolysin intravenously. Two days afterwards the horse went completely sound at continuous and very severe work.—(*Berliner Tier. Woch.*)

Pathogenic effects of the Bacillus Abortus upon Guinea-pigs.

In 1912 Theobald Smith and Marshal Fabyan published an account of a peculiar general disease of guinea-pigs which is produced by inoculating them with Bang's abortion bacillus (*Zentralbl. f. Bakt. u.s.w.*) The disease only rarely leads to death. It resembles tuberculosis, and is characterised by chronic interstitial neoplasms, which chiefly consist of epitheloid-like and lymphoid cells. The post-mortem appearances are marked by a more or less pronounced polyadenitis. The spleen is remarkably large. The liver shows small cicatrices and minute yellowish nodules, generally isolated. The kidneys are either quite normal or severely diseased; in the latter case they are enlarged, and their cortices are beset with small grey nodules. The testicles are almost always atrophied. The lungs often contain tubercle-like growths. Often, also, there are tumour-like swellings of the bones, and an inflammation of the spinal cord with paralysis of the hind quarters. The bacilli are difficult to find in the inflamed tissues.

The bacillus abortus may be present in milk; and it is therefore worthy of enquiry whether it has any causal relationship to sclerotic lesions of the organs and tissues or other chronic diseases of man and the domestic animals. The above-described lesions of the guinea-pig have a practical importance in the examination of the post-mortem appearances after inoculating this animal with milk suspected of being tuberculous.—(*Berliner Tier. Woch.*)

Autoserotherapy in Equine Pleurisy.

Ducher has reported his experience of this now well-known but still debateable method of treatment (*Rec. de Méd. Vét.*) Among the questions which have yet to be settled regarding it is the quantity of pleuritic exudate which should be reinjected. Tappaz uses 15 c.c., Mauhal and Séjournant 2·5 to 20 c.c., and Haan 40 c.c. Ducher's cases seem to indicate that a larger dose is advisable.

One horse with an old-standing exudate, treated with an injection of 20 c.c.. did not survive; and the author concludes that the reason was that the dose was too small.

A second horse, with an injection of 20 c.c., recovered very slowly.

A third horse, with an injection of 60 c.c., recovered in less time.

Finally, a fourth horse, in a very bad condition at the commencement of the treatment, recovered very rapidly with an injection of 100 c.c,, which the animal supported without any disturbance.

The good results of autoserotherapy are due, in a great part at least, to the formation of antibodies which it provokes. Mauhal and Séjournant think that the exudate contains a virulent culture, the toxins which it has already elaborated, anti-toxin, and the product of the neutralisation of the toxin

by means of the anti-toxin. Ducher, discussing the question of the influence of the size of the dose upon the intensity of the reaction which leads to the formation of anti-bodies and upon the rapidity of their elaboration, admits that, if the exudate contains a virulent culture, too large a dose of it would be disadvantageous. He considers, however, that in autoserotherapy either the bacilli are attenuated, or the exudate, along with them, contains products which antagonise their pathogenic effects.

As regards the amount of exudate which can be withdrawn from the chest, Ducker believes that it is possible to withdraw from 4 to 5 litres (= about 7 to 8¾ pints) with impunity. (*La Clinica Veterinaria.*) W. R. C.

ANNUAL REPORT OF THE CIVIL VETERINARY DEPARTMENT BIHAR AND ORISSA FOR THE YEAR 1915-16. [Abridged].

The Civil Veterinary Department, during the year now under review, was in charge of Mr. Pool, of the Punjab Veterinary College, from the 9th of April, 1914, to the 13th September, 1914, as I had been granted leave. For the remainder of the year it was administered by me. From the date of his handing over till the 27th October, 1914, when he was transferred to Madras as Officiating Principal of the Veterinary College, he continued to act as a Supernumerary Officer.

Altogether he spent 163 days in the Districts, and travelled 6706 miles by rail, and 678 miles by road.

Since my return from leave, touring has been continuous. The work of the Department has been very heavy this year, on account of the widespread outbreak of Rinderpest, and the absence of two senior inspectors, Babu P. N. Das and Babu B. L. Sur on sick leave, and of my inability to provide substitutes to act for them.

During the period under report I spent 166 days on tour and travelled 7213 miles by rail, and 1716 miles by road.

I regret to have again to repeat the remarks made by me in last year's report regarding the very few Bihari and Oriya students who think it worth their while to apply for stipends to enable them to carry on their studies at the Bengal Veterinary College. Although the scholarships granted by District Boards have now been increased to Rs. 13 a month, there appears to be no doubt that the real cause of our inability to obtain candidates is the low scale of pay, and the lack of prospects which are open to those who enter this branch of Government service. This opinion has been confirmed by most District Officers.

A scheme for the re-organisation of the Department was submitted to Government before I proceeded on leave, and it is understood that the local Government, after carefully considering it and consulting the local bodies concerned, are about to lay it before the Government of India.

The number of students from this province at the Bengal Veterinary College at the end of the session was 13 in the first year, seven in the second year, and six in third year class, of whom nine, five and five respectively passed at the annual examination.

The new graduates who passed their examinations at the end of March, 1915, will be admitted to the Department at the beginning of the next year.

TREATMENT OF DISEASE.

As in 1913-14, special attention has been given to the reporting of disease by the police, and marked improvement has been noticed in all districts, except three, where the police have not yet realised the importance of this part of their duties. In Champaran, the Chaukidars failed to report rinderpest, and as a result there was a widespread and very virulent outbreak. Itinerating assistants and inspectors, as an important part of their duties, visit thanas as often as possible, and in this way keep the Epidemic Report Register up-to date, District Officers and Superintendents of Police have helped ungrudgingly, and to them special thanks are due for the manner in which they have pushed forward inoculations, and in other ways helped the Department.

The total number of outbreaks of all diseases reported during the year was 3882. 2292 were attended.

No outbreak of scheduled contagious diseases of equines was reported during the year, but there were three outbreaks of anthrax in which five animals died. Necessary steps were taken to control them.

Rinderpest. The year under review has been one in which this disease has been prevalent with more or less virulence in all districts of the Province. In 1913-14 it was reported from a Bihar district for the first time since I took over charge of the Department, and as stated in the report for that year, it caused a large number of deaths in the Saran district, but fortunately did not spread. It was introduced by cattle which returned from the Nepal Jungles, into which they are sent each year for grazing. In October, an investigation of an outbreak of anthrax at Champaran, by Mr. Pool, led to its discovery in that part of the district. An enquiry was started, and it was then disclosed that it had been in existence for about nine months, and had caused considerable mortality in all parts of the subdivision. Active steps were immediately taken to deal with it, by drafting in assistants from other districts, while the first inspector, Babu P. N. Das, was placed in charge of the operations. In spite of severe opposition, a large number of inoculations were successfully performed, and the disease at the end of the year was well in hand.

The number of deaths from rinderpest in Champaran have been compiled from figures collected by the inspectors, the veterinary assistants, and the police; but these do not represent, in my opinion, the total mortality by nearly one-half, as during the enquiry which I made, there was hardly a villager questioned, who did not complain of his losses. Some who took cattle to the grazing grounds returned without any. The disease was particularly severe on buffaloes. I therefore think that the deaths were at least 10,000. Taking Rs. 40 as the average price of each animal that died, cattle owners in Champaran, and especially in Bettiah Sub-division, must have lost Rs. 400,000 worth of stock from this disease alone, during the short time it was prevalent.

Ten other districts have shown a high death rate; but in these districts the number of deaths appear to me to have been underestimated also. Although the total number of deaths for the whole province is given as 23,085 it appears to me that 35,000 would be nearer the correct figure. Taking this number as the actual, and Rs. 30 as the average price of each animal, the total loss to cultivators during the year in Bihar and Orissa falls not far short, in my opinion, of Rs. 1,050,000 from rinderpest alone.

Foot-and-mouth disease was not responsible for many deaths during the year, but there is still a slight increase over the figures for 1913-14.

Hæmorrhagic Septicæmia. The mortality from this disease is, this year, considerably less than that reported in 1913-14, as only 4306 deaths have been recorded against 6612. The number of deaths appear to have underestimated. It was diagnosed microscopically on three occasions.

Black quarter. Only 67 deaths were reported this year. It was confirmed by microscopical examination in four outbreaks.

Anthrax. Deaths are reported from 10 districts with mortality of 149, against 27 of the last year. It was diagnosed microscopically in 13 outbreaks.

INOCULATION.

Every effort that has been possible has been made during the year under report to increase the number of inoculations in villages which have been affected with contagious disease. Pamphlets have been widely distributed, and inspectors have personally visited many outbreaks, in order that they might use their influence with such villagers as have still refused to take up this method of preventive treatment. I regret to have to state that although disease was particularly virulent in five, and part of another, it was very difficult to get any inoculations done, owing to the intense religious prejudices of the people of these parts. In Jamui Subdivision, for example, even the personal efforts of the district magistrate and of the sub-divisional officer showed unproductive results, and practically no inoculations could be done.

The success of the "Serum Alone" method of treatment, as pointed out last year, is undoubted, provided that doses suitable to the district in which it is employed are used. For instance, in Bettiah Sub-division, the normal dose was injected at first, but it very soon became apparent that animals which did not receive double or treble doses or more were not immunised.

There has been no lack of serum or other products of the Imperial Bacteriological Laboratory, Muktesar, this year, and in part to this fact must be attributed the large number of animals which have been immunised. Altogether 130,027 cattle were protected, as compared with 121,020 of 1913-14. If the number inoculated by the Ranchi Inoculators is not taken into account, the staff of the Department have performed 85,688 inoculations, or 32,579 more than in 1913-14. Many more could have been done if a staff of reserve and staff veterinary assistants had been available; 20 extra assistants could have been given employment had they been procurable.

Rinderpest. Inoculations have been performed wherever it has been found possible to do so. The total number of cattle protected by the Departmental Staff was 68,172. Champeran was the district in which the largest number was performed, 15,584 cattle having been inoculated by the local assistants and a special staff up to the end of March. Considerable numbers have also been immunised in six other districts.

Hæmorrhagic septicæmia. 16,722 inoculations were done this year by the veterinary assistants. Of this number 10,165 were with Vaccine, and 6557 were with Serum, the figures of the previous year being 15,297 and 5392 respectively. The total decrease of 3967 was due, mainly, to the inability of the assistants to render aid, owing to their presence at other outbreaks. The total number of deaths after inoculation with vaccine and serum was seven only.

Black quarter. Twenty-six cattle only were inoculated in one outbreak. There were no deaths after inoculation.

Anthrax. Inoculations were undertaken in seven outbreaks, the total number of animals protected being 768.

ITINERANT VETERINARY ASSISTANTS.

"On the 1st April, 1914, there were 41 itinerant veterinary assistants on the roll, including those in charge of four combined appointments. During the year the number was increased to 52. Babu J. N. Mitter resigned; the services of Babu M. M. Bannerjee, veterinary assistant of Balasore, were placed at the disposal of the Agricultural Department, he having been recommended for the appointment of Veterinary Assistant in charge of the Sepaya Cattle Farm and Babu K. B. Lal of Gumla was dismissed for unsatisfactory work, leaving thus, at the end of the year, 49 itinerant veterinary assistants.

I wish to bring to notice the good work done during the year by the following assistants:—Babus M. Agnihotri, Gopalgunge; S. C. Bose, Dhanbad; A. T. Das, Giridih; D. N. Mukerjee, Hazaribagh; S. Chakravarti, Angul; R. N. Prosad, Sewan; B. B. Chowduri, Kendrapara; R. N. Pundit, Jamui; Maulvi E. H. Khan, Gaya Sadr; Maulvi M. H. Khan, Barh.

Veterinary assistant Babu A. C. Sen of Palamau and Babu S. C. Prosad were suspended, the former for bad work, and the latter for submission of a false travelling allowance bill. Both those assistants have been placed in the reserve. The total number of new cases treated by itinerant veterinary assistants has been 53,616 as compared with 40,442 cases treated in 1913-14."

VETERINARY HOSPITALS.

"The number of hospitals was reduced from 22 to 20 during the year, as the vacancies in the hospitals at Dumraon and Hathwa could not be filled.

[Several hospitals, quarters for assistants, and a dispensary are noted as "building" or "under consideration."]

The veterinary assistants in charge of the following hospitals are commended for the work done by them during the year:—Babus C. L. Ganguly, Bankipur; N. N. Ghose, Muzaffarpur; N. M. Chatterjee, Ranchi; M. R. D. Nadam, Cuttack; R. K. Ram, Sitamarhi; K. K. Mitter, Gaya; J. L. Rose, Bhagalpur; Maulvi Md. Azam, Monghyr.

The shoeing forges with the exception of Monghyr continued to do well and show considerable profits, the total income being Rs. 5142 against an expenditure of Rs. 4062. Good nalbands are urgently required, but are very difficult to find, although attractive wages are offered.

The total number of in-patients and out-patients treated at the hospitals was 26,044 against 23,849 of the previous year."

Under the head of "Bull Rearing and Breeding Farms" it is reported:—"The Bettiah Farm is still under the control of the Civil Veterinary Department. At the end of the year the herd consisted of 37 cows, 11 bull calves above two years of age, 14 bull calves of two years of age, 3 of one year, 6 under twelve months and 2 stud bulls. Twenty-six bulls and 17 buffalo bulls have been distributed. Thirty-two calves were born during the year, out of which 21 were heifers and 11 were bull calves."

"The Government Cattle Breeding Farm, Sepaya, is not under the Veterinary Department, but is managed by a special officer directly under the Director of Agriculture. The stock in the month of April consisted of four bulls of breeding age, 50 cows, 14 heifers and 51 calves. The condition of the herd throughout the year was good.

The need of bulls in all districts of the Province where breeding on a large scale is carried on is greatly felt, but it will be a long time before anything tangible can be done, as the present breeding herds are totally inadequate in size. The plan adopted by the Bettiah Raj of confining the distribution of the bulls to the Bettiah Estate is the one most likely to give good results. It appears to me that an effort should be made to improve the cattle of Orissa by starting another cattle farm in Cuttack or Puri district, and it would be advisable during the coming year to make enquiries in those districts with a view to selecting a suitable site."

[Particulars are given of visits to the principal fairs and shows, with demonstrations of methods of treating contagious diseases.]

The report concludes with notes on the Subordinate Veterinary Establishment.

"The number of inspectors was the same as last year, viz., five only, but two additional posts, one on Rs. 130 and another on Rs. 70 were sanctioned, with effect from April, 1915.

Fifty-seven veterinary assistants were in Government service on 1st April, 1914. As 11 assistants joined the department, the total number on the roll at one period was 68, but three assistants left the department, one was dismissed and one died, so the number at the end of the year was 63, and one employed by the Bettiah Raj. This figure includes the five who were on the Reserve list on 31st March, 1915."

"The four inspectors held charge of the same circles as in previous year, whilst the first inspector, Babu P. N. Das, held a roving commission, and made special enquiries into the work of veterinary assistants whenever necessary. The most important duty on which he was employed during the year was in connection with the outbreak of rinderpest in Champaran district. As usual it was performed with energy and intelligence, and I have pleasure in again bringing his name to the favourable notice of Government, I regret to have to state that he has had to take medical leave on account of his eyesight, and that it is doubtful if he will be ever able to return to duty again.

On the whole the manner in which the inspectors and assistants have done their work this year is worthy of much praise. Both classes have responded with energy to appeals for extra work to suppress the outbreaks of contagious diseases."

RESEARCH WORK.

"Blood slides were sent on 98 occasions by the veterinary assistants for examination at the Raymond Research Laboratory. The following diseases were diagnosed:—Strangles, rabies, anthrax, hæmorrhagic septicæmia and black quarter.

Four 'Kumri' horses were sent to Muktesar for experimental purposes, at the request of the Imperial bacteriologist.

The Post-graduate training of the inspectors and the establishment of a laboratory for the diagnosis of diseases are urgently required, and will be taken up as soon as the necessary staff is available.

D. QUINLAN, M.R.C.V.S.,
Superintendent, C.V.D., Bihar and Orissa.

NOTE ON A SUPPOSED SOLUBLE TOXIN, PRODUCED IN ARTIFICIAL CULTURE BY THE BACILLUS OF MALIGNANT OEDEMA, BY G. BARGER, M.A., D.SC., AND H. H. DALE, M.D., F.R.S. From the Department of Biochemistry and Pharmacology, Medical Research Committee. [Abridged].

Some months ago we made some experiments on the nature of a toxic substance occurring in the filtrates from the cultures of the bacillus of malignant oedema, an organism which has acquired special importance during the war, as being one of the spore-bearing anaërobic bacteria concerned in the production of gas gangrene from soil-infected wounds.

Our observations were limited to the cultural filtrate from one particular strain, for the culture of which, as well as for the quantity of the reputed toxin, with which many of our experiments were made, we are indebted to Mr. J. B. Buxton, F.R.C.V.S. The strain was originally obtained from a case of gas gangrene, and its correspondence in all diagnostic points with the true bacillus of malignant oedema has been confirmed by several bacteriologists. From the muscles and areolar tissue of guinea-pigs dying of infection with an organism of this type Roux and Chamberland expressed a juice which, after sterilisation by filration, killed other guinea-pigs with acute convulsant symptoms. Besson prepared a similarly toxic filtrate by growing the organism on sterilised meat. which the digestive activity of the organism rapidly liquifies. The filtered juice of a five or six days culture kills medium-sized guinea-pigs with acute symptoms in a dose from 3 to 5 c.cm. given hypodermically. It is a juice of this kind which has been regarded by Besson and others as containing a characteristic toxin produced by the organism, and attempts had been made to prepare an antitoxic serum by immunising animals against it. A broth culture of the organism, however abundant the growth, will not yield a filtrate of such potency.

The material used by us was obtained by growing the organism for five or six days at 37° C. on minced oxheart, previously sterilised in the autoclave. The culture was started in hydrogen and provision made for the escape of gases, which the culture soon produced in abundance, by a tube leading from the cultural jar into a trap filled with sulphuric acid. The semifluid evil-smelling product was filtered first through paper-pulp, and then through a Berkefeld candle. A nearly clear brown filtrate was obtained.

This filtrate produced the acute intoxication described by Besson when injected into guinea-pigs, the fatal dose for an animal weighing about 300 grams varying from 3 to 5 c cm. with different preparations. It was at once evident, however, that the toxic constituent had none of the characteristics of a true bacterial toxin. The relatively large volume of the filtrate required for the production of general symptoms and the almost immediate onset of the symptoms when the dose was sufficient to produce them at all, suggested rather the non-specific action of some product of putrefactive digestion, and the necessity of using solid meat as a culture medium was suggestive in the same direction. The suggestion was confirmed by the observation that the toxicity of the product was but little affected by brief boiling. Dr. Walpole filtered the fluid under pressure through a collodium film, which was impervious to diphtheria toxin, and the filtrate showed the full toxicity of the preparation.

The symptoms produced are both local and general. Locally a large, oedematous, haemorrhagic infiltration is produced in the subcutaneous tissue and underlying muscle, in a considerable area surrounding the site of injection. With a non-fatal dose this local effect may be the only one, except for a vague malaise. The general symptoms comprise tremors, weakness, and excitability, rapidly passing into extensor convulsions, which usually terminate in death within fifteen minutes of the injection. *Post-mortem* the lungs are found to be oedematous, with areas of haemorrhagic consolidation, and the trachea contains a blood-stained froth.

The question of practical interest was the identification, among the volatile basic constituents, of the toxic principle. A few experiments showed that the ammonia fraction was entirely responsible for the symptoms produced, and that pure ammonium salts, in dose and concentration equivalent to those of the ammonium salts in the "toxin," produced all the effects described, both local and general, in perfectly characteristic manner. Young guinea-pigs showed, in proportion to their weight, the same excessive sensitiveness to the general convulsant action of ammonium salts as to those of the toxic culture filtrate. Neither the organic bases, in the proportion present, nor the fatty acids contributed materially to the effect.

There seems, then, to be no ground for supposing that the bacillus of malignant oedema, in an artificial culture of the type described, produces anything in the nature of a specific toxin. The production by it of a toxic solution from meat depends on its intense proteoclastic and desaminating action. The proteins are rapidly broken down to amino-acids, and from these the amino-groupings are then split off, yielding ammonium salts of

fatty acids, which accumulate in surprising concentration. To these must be attributed at least the greater part of the acute symptoms produced by the culture filtrate in the guinea-pig; though doubtless intermediate products of proteolysis may play some part, especially in the delayed death which sometimes follows recovery from the immediate acute symptoms.

The chief interest of the observation seems to us to be the hint it furnishes as to one of the factors favouring spread of infection with the bacillus, in the tissues of an animal in which it has once obtained a hold. It is well known that with washed spores, or even with a broth culture of this organism, it is practically impossible to produce an experimental infection. Some local tissue injury is needed to give the infection a chance of success. This may be mechanical injury, as by contusion of tissue, or irritation by soil particles; or chemical injury, as by lactic or acetic acid. Among such chemical injuries we may now, with some reason, include the effect of the toxic juice formed by the bacillus from meat, which is essentially that of a strong solution of ammonium salts. Given injured tissues in which the growth may start, it is evident that the localised production of ammonium salts will soon be sufficient to create in the neighbouring tissues conditions favouring the spread of the growth, which may then go on indefinitely.—*Brit*: *Med*: *Jrnl.*

Mr. H. Chaplin, M.P., on Horse-breeding.

When recently there was presented to Parliament the report of the small Committee appointed by the Earl of Selborne, as President of the Board of Agriculture and Fisheries, the Right Hon. Henry Chaplin, M.P., appended certain reservations and a supplementary report. It must not be overlooked that no man living has done more during the last thirty or forty years for thoroughbred and light-horse breeding than Mr. Chaplin. He is a member of the Jockey Club, and as long ago as 1867 he won the Derby with Hermit, a horse that was destined to take a big place in shaping the history of thoroughbred horse-breeding in this country.

Mr. Chaplin and the Right Hon. Walter Long, Gen. Cowans, and Gen. Birkbeck were chiefly instrumental in urging on the Government the importance of accepting Colonel Hall Walker's splendid offer on the Government's valuation of Tully and Russley, and the gift of the breeding and racing studs in existence there.

As long ago as 1875 Mr. Chaplin moved in the House of Commons "that this House views with apprehension the large and continued export of the best and soundest stud horses and brood mares for general purposes from this country, and wishes to direct the attention of her Majesty's Government to the national importance of taking such steps as may be desirable to prevent the detioration of the stock which remains." He then gave some details, on the authority of the German Ambassdor, of the procedure in Prussia, where there were three principal breeding studs, which were originally intended for supplying the Royal stud. In addition there were eleven depots, containing about 1,450 stallions. From these depots, at the proper season of the year, the horses were distributed in numbers, varying from one to six, under the charge of Government servants, and they were located at 540 different stations throughout the country, where accommodation was usually provided for them by the landed proprietors who took an interest in the matter. The whole cost of maintaining the studs was £170,000 per annum, of which there was received back in fees £70,000, and the annual produce of those establishments was something like 50,000 foals, at a gross cost to the State of £100,000.

But the serious part of the question was that most of the horses in Germany were of English extraction, were bred either from English horses or English mares, and one-third of the whole had been imported straight from this country. That was forty years ago. To-day the produce of English horses is being used against us. Germany and Austria have drained the countries of our best thoroughbred stock likely to produce horses for war purposes, and of a certain invaluable type of mare. But for years the Board of Agriculture has steadily refused to recommend State aid on an adequate scale. No encouragement has been given to the farmer to breed the right type, and it has been left to the War Office by its serious representations to bring about the present crisis.

In Mr. Chaplin's supplementary report he traces events from the time when he spoke in the House of Commons in 1875, to the period when he served on the Royal Commission on Horse Breeding, which ceased to exist in 1911. He touches on the various letters of complaint from the War Office to the Board of Agriculture during the last two years, and comments: This is indeed a stupendous disclosure, a deplorable change in the character of the horse supply of the nation, and the more remarkable when, by universal consent, it is admitted that at one time, and for a vast number of years, England was famous throughout the world for its breed of horses and for the stamp and the quality of the supply which it possessed."

He points out that the United Kingdom has been drained year after year by one country after another of great numbers of our best thoroughbred country stallions and our best half-bred country mares. And he is convinced that this is the real cause of the deplorable position into which the horse supply of the country has fallen. So long as we continue to lose the best of our breeding material in such large proportions commonsense tells us it could not be otherwise.

Mr. Chaplin says, what is really needed more than anything else is a reliable census of suitable thoroughbred sires, and all thoroughbred horses in training which give promise of becoming suitable sires: "I am greatly afraid that it will be found to be short, and even dangerously small, and I suggest it should be undertaken without delay. The sole information that we have on the subject at present shows that only 205 thoroughbred stallions are registered in England and Wales. If that is all that we have it is exceedingly serious."

It is suggested, therefore, that until we have a sufficient number of stallions for our own use no license for the export of any horse should be granted. Mr. Chaplin describes as an "absolute fallacy" the idea that the foreign market for thoroughbred stallions affects the production of sires of that class in the United Kingdom. All such high-class horses are bred, with the rarest exceptions, for one purpose, and one alone—for racing. "They are bred in the hope that they may become winners of big races, classic or otherwise, in which case the dam and her future produce become the source of a fortune greater or less to the owner, and whether the foreign market for stallions of this class is lost or not, so long as racing continues they will be bred in the future exactly as they have been bred in the past, and independently of all other markets except the market which is provided for them by racing."

Here let Mr. Chaplin's two important suggestions be emphasised: "Racing being the foundation upon which the light horse-breeding industry rests, in the reconstitution of any existing central authority, or in the creation of any new one in connection with the light-horse industry, it would be an advantage if racing was represented upon it by more than one of its members; and it would also be well if British farmers, who comprise the largest number of breeders, should be represented upon it by one of their own class as well."—*The Daily Telegraph.*

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.		Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
		Out-breaks (a)	Animals.	Out-breaks (a)	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
Gr. BRITAIN. Week ended December 25		9	9					38	57	19	81	248
Corresponding week in	1914 ...	12	21					‡	‡	8	58	199
	1913 ...	19	23			7	40	48	89	12	53	347
	1912 ...	14	14			1	5	45	103	7	32	433
Total for 52 weeks, 1915		575	642	56	693	50	87	‖911	‖1951	257	3994	16702
Corresponding period in	1914 ...	722	796	27	166	97	286	‡1530	‡2642	226	4356	39277
	1913 ...	594	652	2	73	162	438	2382	4647	235	2573	32034
	1912 ...	743	840	83	645	172	315	2873	5068	301	2920	39653

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked: —

Board of Agriculture and Fisheries, Dec. 28, 1915 ‖ Figures for thirty-nine weeks only.

The Swine Fever Report.

The final Report (Cd. 8045) of the Departmental Committee appointed by the Board of Agriculture to inquire into Swine Fever contains, in addition to the report of the Committee, minutes of evidence and appendix, and is publised by Messrs. Wyman & Sons, Ltd., Fetter Lane, E.C., at 8d.

The following Conclusions and Recommendations indicate broadly the lines taken in the enquiry.

"After consideration of the Report on experiments carried out at their request by Sir Stewart Stockman, the Committee arrived at the following conclusions:—

(1) That the manure of pigs suffering from swine fever is infective.

(2) That a period of fourteen days may be regarded as sufficient to bring about the disinfection of infective manure through natural causes.

(3) That rats are not, as has been suggested, pathological carriers of swine fever.

(4) That all the available evidence suggests that swine fever is not disseminated by external parasites.

(5) That while persons, vehicles, and animals which have been in contact with infected pigs or premises may carry infective material mechanically within the area of their movements, subject to the time limit indicated above, the evidence leads the Committee to the conclusion that all wide dissemination of disease is due to the movement of infective pigs.

(6) That a pig may become infective in three days after it has itself contracted infection and before it has actually exhibited clinical symptoms of the disease, and a pig which has contracted the disease may continue to be infective for a variable period, the extent of which has not yet been fully ascertained, but which is often of considerable duration.

(7) That there would appear to be cases in which healthy pigs which have not been visibly affected by swine fever and which, on post-mortem examination show no evidence of having suffered from swine fever, are infective and continue to be so for a considerable time.

While the experimental investigation of this matter is very difficult and the evidence in support of the existence of carriers is largely circumstantial, the possiblility that the carrier pig exists cannot be lost sight of, especially in considering the practicability of extirpating swine fever.

Sir Stewart Stockman's report describes experiments which have been made. These experiments deal with the use of serum treatment and vaccination as methods of combating swine fever.

'The causal agent of swine fever is a living organism which is capable of reproducing itself at a rapid rate in the bodies of susceptible pigs, but no method of cultivating it artificially has yet been discovered.

The organism can pass with fluid containing it through the pores of the finest bacterial filters which can be relied upon to arrest micro-organisms of ordinary size. The filtrate of the former retains its virulence, while that of the latter is no longer virulent.

The causal organism of swine fever has never been rendered visible under the microscope, the probable explanation being that it is beyond the range of microscopic visibility. Whether it belongs to the animal or vegetable kingdom cannot yet be determined.

If an immune pig which has recovered from swine fever be inoculated with a large quantity of virus, such as is contained in the blood of an affected pig, it becomes hyper-immune.

The serum of a hyper-immune pig if injected into other pigs will protect them for a short time against swine fever. Such a serum is called a protective serum, or an anti-serum.

From the experiments it appears that treatment with serum is highly effective in saving the lives of pigs which are exposed to infection immediately after serum has been injected, if they are free from infection at the time of treatment. Serum, however, has no curative effect, and the results of its use as a protective are so far disappointing in the case of young sucking pigs.

Treatment with serum alone confers only a short period of immunity, but this can be converted into a prolonged immunity if the pigs treated with serum are allowed to come in contact with infection. This may be called a natural vaccination.

'Artificial vaccination' consists in the simultaneous application of serum injection with an infection produced by the administration of virus by feeding or by inoculation. This procedure appears to be attended by greater risks of producing severe forms of swine fever than natural vaccination, and the actual inoculation of virus appears to be more dangerous than feeding with virus.'

The special procedure adopted in certain areas during 3½ years appears, in those areas, in which swine fever had previously been brought to a low ebb, to have been successful in keeping down the number of outbreaks of disease at a time when the number of outbreaks underwent a very large increase in other parts of Great Britain. The results, however, are not such as to indicate that swine fever can be eradicated by this procedure in these areas unless all pigs from other areas are excluded from them. The special procedure has been abandoned for the present.

General Conclusions.

The continued prevalence of swine fever appears to be due principally to its highly contagious character, and the difficulty of its recognition by the pig owner in its early stages and in its milder forms. To these causes must be added the difficulty of completely tracing the place of origin and the movement of pigs by which the disease has been spread. The extirpation of the disease is practicable only by such drastic measures of slaughter as would involve a prohibitive outlay, and by such severe restrictions on movement as would be fatal to the industry of pig keeping. New preventive methods may bring about a condition of affairs more favourable to the prospect of eradicating the disease, and the study of such methods is being actively pursued.

Recommendations.

In view of all the evidence laid before them the Committee recommend :—

(1) That the attempt to extirpate the disease by general slaughter should be abandoned for the present.

(2) That the immediate object of future policy should be—(*a*) To reduce mortality from the disease ; (*b*) To control the spread of the disease.

(3) That in order to reduce mortality, the use of protective serum without avoidable delay in infected herds should be encouraged by every possible means and in particular by facilitating the supply of serum.

(4) That the production of immune herds by simultaneous administration of serum and virus should be undertaken where pig owners so desire, on premises selected as suitable and under careful supervision and restrictions.

(5) That in order to control the spread of disease the isolation of infected premises should be maintained by restrictive regulations, but that such restrictions should allow of the introduction to infected premises of pigs to be treated immediately with serum.

(6) That careful consideration should be given in the light of further experience to the extent to which existing general restrictions on movement may be relaxed as the result of new measures.

(7) That in view of the experimental results above referred to the lapse of a short period of time may be relied upon for disinfection of premises, and should be regarded as preferable to chemical disinfection in the case of large quantities of manure and of premises not readily capable of being disinfected by artificial means.

While the Committee submit the above recommendations based on the present state of knowledge, they are strongly impressed by the possibility of artificial vaccination as a method of combating swine fever. They also recognise the advantages that might accrue from the discovery of a reliable diagnostic test for obscure cases, and they therefore recommend that investigation into this and cognate matters should be actively continued. In conclusion, the Committee wish again to record their appreciation of the zeal and ability displayed by Mr. P. S. Lawrie in the discharge of his duties as Secretary of the Committee, and to express to him their thanks for the valuable assistance which he has rendered.

G. L. Courthope, *Chairman.* M. Locke Blake.
Charles E. Longmore. Charles Douglas.
Luke White. Frank W. Garnett.
Stewart Stockman. *John Penberthy.
A. W. Anstruther.

*Professor Penberthy's signature is subject to the following reservation :—"I am unable to subscribe to paragraph 3 (2), as I do not consider the experiments on which it is based are conclusive. I think it is highly desirable that further experimentation on the point should be undertaken and its result well considered before any period is accepted as the basis of administrative measures."

Anglo-Franco-Belgian Veterinary Relief Fund.

The following additional donations are reported :—

Messrs. J. & H. Sumner, Liverpool	£5	5	0
North of Ireland Veterinary Medical Assoc.	5	5	0
Previously reported	69	16	0
Total	£80	6	0

At a meeting of the Council of the Clydesdale Horse Society, held on Wednesday afternoon, Dec. 22, it was reported that at the meeting of the joint-committee of the Glasgow Agricultural Society and of this society, Mr. Andrew Robb, M.R.C.V.S., Glasgow, had been appointed chief inspector and umpire, with Professor John R. M'Call reserve ; that the Glasgow Agricultural Society had nominated Mr. W. F. Houston, M.R.C.V.S., Paisley, as one of the examiners, and the Council now nominated as the other examiner Mr. W. G. Forbes. M.R.C.V.S., Kilmarnock, with Mr. James Lindsay, M.R.C.V.S., Dumfries, as reserve.

Mr. Andrew Robb, F.R.C.V.S., veterinary surgeon ; Mr. Wm. Robb, F.R.C.V.S., and Professor John R. M'Call, M.R.C.V.S., deputy veterinary surgeons, were appointed at the annual general meeting of the Glasgow Agricultural Society.

OBITUARY

E. P. Jenkins, M.R.C.V.S., Castle Hotel, Llandilo.
Graduated, Glas : June, 1899.

Mr. Jenkins died on December 23rd, aged 41.

ARMY VETERINARY SERVICE

War Office, London, S.W.

Extract from *London Gazette*,

War Office, Whitehall, Dec. 23.

Regular Forces. Army Veterinary Corps.

The appointment of the following temp. Capts. is antedated as follows :—T. W. J. Gardiner to Oct. 7, 1914 ; R. W. Simpson to Oct. 13, 1914.

The Christian names of temp. Lieut. Alfred Edmund Davies Froggatt are as now described, and not as stated in *Gazette* of Jan 5.

Dec. 28.

To be temp. Lieut. :—L. G. Gryspeerdt (Dec. 11).

Dec. 29.

To be temp. Lieut. :—R. Hayes (Dec. 15).

TERRITORIAL FORCE. ARMY VETERINARY CORPS.
Dec. 28.

To be Lieut:—G. T. E. Anderson (Dec. 29).

The following casualties in the Mediterranean Expeditionary Force, are reported:—

DIED—Pte. S. P. Lock, 46, Lowland Dvl. Mobile Vet. Section (T.F.)
Pte. W. Davey, 4204.

The following casualty in the Balkan Expeditionary Force is reported:—

DIED—Pte. H. H. S. Trinder, 10125.

OBITUARY

SIMPSON.—On the 27th December, at "Bonnie Brae," St. Ives Road, Maidenhead, Emily Mary, beloved wife of James F. Simpson, F.R.C.V.S., aged 67. Interred at Maidenhead Cemetery, December 30th.

Magnesium Chloride as Cytophylactic.

Last September Delbet and Karajanopoulo reported to the Académie de Médecine the results of their most recent researches into the influence of magnesium chloride in stimulating phagocytosis. From observations *in vitro* they found that the action of a solution of 12.1 per 1,000 of anhydrous magnesium chloride in stimulating phagocytosis was 75 per cent. greater than that of a solution of sodium chloride (8 per 1000), which itself caused 63 per cent. more than Ringer's solution, and 154 per cent. more than isotonic sea water. They next ascertained that this cytophylactic action of magnesium chloride was to be observed when an intravenous injection was made during life. Their first experiment consisted in injecting 150 c.cm. of the 12.1 per 1000 solution into the saphenous vein of a dog weighing 16 kilograms. On comparing the phagocytic action of the blood taken before and thirty-five minutes after the injection they found that in the first specimen 500 polynuclear corpuscles took up 245 microbes, and in the second 681, an increase of 180 per cent. They then by a rather elaborate experiment, details of which were not explained, ascertained that an even more marked result occurred when the phagocytosis took place in the circulating blood itself; the increase in the case of the *Bacillus coli* was 333 per cent., and in the case of the *Bacillus pyocyaneus* and cocci 129 per cent. The injections did not produce any toxic symptoms, but they had not made them in man, although they had used the solution of magnesium chloride for dressings and subcutaneously with good results.

At the meeting of the Académie on November 23rd M. Pinard reported very favourably on the use of a solution of magnesium chloride in the treatment of wounds; owing to the difficulty of obtaining the anhydrous salt he had used the crystallized salt in corresponding proportion, which was calculated to be 17.5 per 1000. The solution actually used was made by dissolving 18 grams of crystallised magnesium chloride in 1000 grams of sterilised water. In treating the wounded from the battle of the Marne Pinard had used antiseptics, but after October 12th 1915, he had entirely abandoned their use, and all the wounded from the Champagne actions were treated solely with the magnesium chloride solution. All the cases when received had infected wounds, which were suppurating freely. The wounds were irrigated with the solution and covered with a thin layer of sterilised absorbent wool impregnated with the solution. All cases which were suppurating, or which presented anfractuous wounds of the muscles or bones, were dressed during the first five days twice a day, after that once a day. No drains were used, and any counter openings considered necessary to afford free exit to the pus were small. The results, Pinard stated, were such as he had never before witnessed. Alike in wounds of muscles and those which involved bones, suppuration diminished very rapidly and the foul odour progressively grew less. Amputation wounds did extremely well; the epidermis extended from the edges with astonishing rapidity, as the neck of a bag is drawn in by a string, and in no case was it necessary to cauterise exhuberant granulations. The stumps in some of the cases in which the amputations had been performed on September 25th, 26th, and 27th, were completely cicatrized on November 23rd, but in a few there was a small fistulous opening leading down to the bone; in such cases the wound was irrigated with the solution every day, and the amount of excretion diminished daily. In wounds involving bones suppuration diminished rapidly, and the exposed bone either became detached in small fragments, each irrigation bringing away particles, or the bone became red and covered with granulations. If all the intricacies of the wound were thoroughly irrigated, the offensive odour of the discharge disappeared generally in a few days and callus formed rapidly. "When I compare," Pinard said, "the results I obtained with the wounded from the battle of the Marne, which I treated with antiseptics, with those I have recently obtained with the wounded from the battle in Champagne treated with the solution of magnesium chloride, the conviction that a great advance has been achieved is forced upon me.—*Brit: Med: Jour:*

Glandular Partial Hermaphroditism.

Dr. Blair Bell has had an opportunity of studying a case in which a patient commenced life and passed publicly as a normal woman, menstruating regularly for eighteen months. The catamenia then ceased, and masculine charactistics developed. At the age of 19 the voice had become deep, a small moustache had developed, and the distribution of hair on the surface of the body was noted to be of the masculine type. An exploratory operation was performed. The right genital gland proved to be a small normal ovary, not in a highly active condition. The left genital gland was a true ovotestis. The naked-eye appearances were instructive, the gland on section showing a pale cortex presenting all the appearances of an ovary, and a dark medullary portion. On microscopic examination the cortical part was seen to be made up of true ovarian tissue, with normal Graafian follicles; the more central portion was testicular tissue, made up of seminiferous tubules and testicular interstitial cells. No spermatogenesis was seen. Dr. Blair Bell classifies this case under the head of "glandular partial hermaphroditism." Total hermaphroditism—the power of self-fertilization or at least of fertilizing others and of being fertilized—is limited to invertebrates. Partial hermaphroditism, on the other hand, is known to exist in man. As judged by the strict standard of histological investigation, all the recorded cases except one of glandular partial hermaphroditism have been found to possess mixed gonads or ovo-testes with or without irregularities in the sex characterization of the genital ducts, external genitalia, and secondary characteristics. Dr. Blair Bell agrees with Pick and Tuffier and Lapointe in holding that all cases reported and accepted as "true hermaphroditism" should be called "glandular partial hermaphrodites." The ovotestis has been detected in ungulates, moles, and other mammals, as well as in man.—*B. M. J.*

Dried Yeast as Food for Farm Stock.

Dr. Crowther contributed an article to the Journal of the Board of Agriculture on tests of dried yeast for stock feeding. He gives the following summary of experience with the food throughout the past winter:—

1. Dried yeast has proved a safe food for cows, pigs, and calves.

2. For cows, dried yeast is not to be strongly recommended, since they show a special aversion to its bitter taste.

3. It has proved a good food for pigs, having given results markedly better than those obtained with an equal weight of wheat "sharps." Despite the increased cost of the ration on introducing dried yeast in the place of an equal weight of "sharps," the margin of profit on the feeding has been undoubtedly increased.

4. Dried yeast has proved a safe food for calves, but no evidence has been obtained as to its merits in comparison with other food stuffs commonly used for calf-rearing.

5. Dried yeast keeps well, and on mixing with other meals and water may be kept for some time without objectionable fermentation taking place.

6. In arriving at these conclusions no account has been taken of the value imparted to the manurial excreta of the animals by the consumption of dried yeast. From its composition this may be expected to be as high as that of any other foodstuff commonly used on the farm.

7. Although the experience with dried yeast at Garforth, as outlined above, has been favourable, there is no reason to believe, either from the results of experiments or from careful observation of the general health of the animals throughout the tests, that the dried yeast possesses special medicinal or dietetic virtues which any other highly digestible food rich in albumenoids might not be expected to possess.

Chenopodium in Uncinariasis.

Bishop and Brosius of Panama City (*Journ. Amer. Med. Assoc.*, November 6th, 1915) have continued Levy's researches, which showed that oil of chenopodium, a proved vermifuge, was not dangerous as a drug. It was prepared from the fruit of *Chenopodium ambrosioides*, and it was long known as a remedy for ascarides. The authors administered oil of chenopodium to 108 patients suffering from hook-worm disease, of whom 92 took no other drug, while the remainder were treated alternately with thymol alone and with chenopodium, or with a chenopodium-thymol mixture alternated with pure thymol. In one instance 1379 hookworms were expelled in a first whole stool. The patients were in many instances very ill already, but the deaths that occurred were, in all cases, clearly due to other causes than the chenopodium. A treatment consists of 48 minims, often repeated at intervals of three days, without any of the prostration and weakness not rarely occasioned by thymol. The oil was put up in capsules of eight minims, and the authors gave two capsules to the dose, including three doses to the treatment, given two hours apart. Each treatment was followed in four hours by two ounces of castor-oil. Bishop and Brosius found that the method of administration of chenopodium was simple; that the drug could be given at shorter intervals than when thymol was used; that it caused far less pain and discomfort than thymol; and, in short, that it was a more efficient vermifuge in the treatment of uncinariasis.

Stomoxys Calcitrans as a carrier of the virus of Poliomyelitis.

The following is from a letter to the Editor of *The Lancet*, by J. C. T. Nash, of Norwich.

"My personal observations when inquiring into cases of poliomyelitis occurring in Norfolk afford strong additional evidence in support of the theory that infection is conveyed by stomoxys calcitrans. I have found this fly in numbers in the houses in which the cases occurred in every instance which I have personally investigated, and stables, cowsheds, or bullock sheds have always been noted in the immediate neighbourhood. The most recent case I have inquired into affords additional weighty evidence, such as I have sought hitherto without success.

On receipt of a notification of poliomyelitis in the Freebridge Lynn rural district in Norfolk I asked Mr. C. S. Woodwark, the district medical officer of health, to be so good as to secure specimens of the flies in the house, *especially those seen at the window*, and to note whether stables or cowsheds were near. Mr. Woodwark sent me several specimens which proved to be chiefly stomoxys, and in answering in the affirmative my question as to cowsheds, etc., gave the additional suggestive information that in a cowshed about 100 yards distant a beast had recently died of *an obscure disease with paralytic symptoms which the veterinary surgeon called in was unable to account for.** The child who was later notified as suffering from poliomyelitis had been "bitten" by flies. The beast had been disposed of, so further investigation was out of the question, but I venture to think that the evidence available is strongly corroborative of the view that stomoxys is the carrier of poliomyelitis infection. This might explain the high comparative incidence of the disease in rural as compared with urban areas.

* These italics are ours.—Ed. *V.R.*

THE TREATMENT OF SURGICAL CONDITIONS IN ARMY HORSES.

I believe there is at the present time more veterinary work in some of the camps in this country than the resident Veterinary Officers are able satisfactorily to cope with, and some "surgical" conditions require extensive operative treatment to which the Veterinary Officers cannot devote the necessary time.

Undoubtedly many excellent and experienced practitioners have responded to their country's call, but it cannot be denied that the majority of recent recruits of the A.V.C. are men who have qualified during the last few years. To those of us who have been in the profession for say ten to twenty years it is common knowledge that greater success in the more serious surgical cases has been attained after years of experience.

We have in the profession men from 40 to 60 years of age who may justly be considered to possess more than average surgical skill, but who cannot give up their practices to take commissions in the A.V.C. Many of these if approached would undertake surgical work in the more valuable horses provided the patients were stabled in the district. One veterinary surgeon could—if he were assisted by useful men as dressers—undertake the treatment of forty or fifty patients.—Yours faithfully,

PRACTITIONER.

Original articles and reports should be written on oneside of the paper only and authenticated by the names and addresses of writers, not necessarily for publication.

Communications for the Editors to be addressed
20 Fulham Road, London, S.W.